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YOSEMITE NATURE NOTES

VOLUME XXXVI - NUMBER 11 NOVEMBER 1957

The Wawona covered bridge in 1926.
—*Anderson*

In 1955 the bridge was beginning to sag.
—*McIntyre*

After the flood of 1955 cribbing saved the bridge.
—*Hubbard*

Yosemite Nature Notes

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VOL. XXXVI NOVEMBER 1957 NO 11

SAVING THE WAWONA COVERED BRIDGE

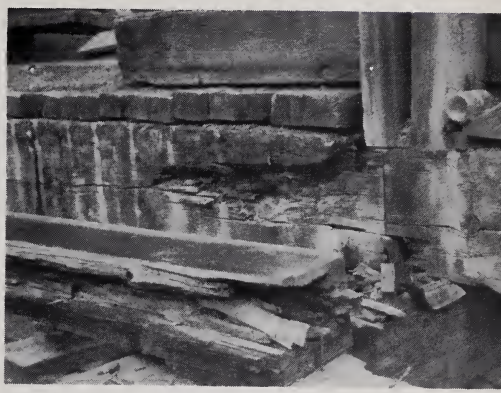
By Jack Fry, Ranger Naturalist

To Ranger Naturalist Arthur G. Remple's question, "Can the Wawona Covered Bridge Be Saved?" (*Yosemite Nature Notes* 35:3, 1956) we can give two answers, yes, and no. We can say no, because the original bridge, built sometime before 1874, has been dismantled. On the other hand, we can answer in the affirmative, for the bridge has been restored, using many of the same materials which were part of the original structure.

The old covered bridge, which had for many winters withstood the battering and hammering of the high waters of the South Fork of the Merced River, was mortally wounded during the floods of the 1955 winter.

Hay freighter in the late 1800's headed for Yosemitet Valley.

—*N.P.S.*



Rot was at work.

—*Udell*

The rotted timbers were no longer able to stand up against the swirling waters of the river at flood stage. A temporary wooden pier was placed under one end of the bridge to prevent its total collapse—which seemed apt to occur at any time. One thing was very evident — the bridge could not survive another winter. Something had to be done.

A bridge at this location is necessary, not only for pedestrians and equestrians, the principal users of the bridge since realignment of the Wawona Road took place in 1931, but for limited vehicular traffic in the event that the main bridge was damaged or washed out by a future

flood. The question, then, was should the covered bridge be restored or should a modern type bridge be constructed in its place.

Three types of replacement bridges were suggested: (1) an all-concrete bridge; (2) a steel beam bridge with a concrete deck; (3) a wood beam bridge with a laminated wood deck. Any bridge constructed here would have to have a center span which would be long enough to allow for the passage of long uprooted trees and other debris during a flood. The deck and its supporting structures would have to be completely above the level reached by the South Fork at flood stage, and the clear width of the deck would have to be at least ten feet.

There were many reasons for considering the restoration of the old bridge. One was its historical significance to the Wawona area and Yosemite National Park. In addition it was one of the last survivors of the many covered bridges which were constructed in California. Another consideration was that the Wawona Covered Bridge was the only one of its kind in a western National Park Service area and possibly the only

Careful measurements were made.
—*McIntyre*

covered bridge in the entire National Park System. Finally, it was felt that its presence would contribute a great deal to the Wawona Pioneer Village which will be constructed under the National Park Service MISSION 66 program. The Village will utilize the old wagon shop to house historic vehicles and the Hodgdon Homestead Cabin, which will be furnished and equipped as it may have been at the time it was built. In fact, the bridge restoration itself was a MISSION 66 project and was considered one of the first steps in the development of the pioneer village.

Before describing the restoration process, it might be of interest to examine the basic plan of the bridge. The bridge consisted of two parallel wooden trusses 14 feet apart. Each of these had an overall length of 130 feet and a clear span of 106 feet.

Bridge detail.
—*Udell*

Each was composed of an upper chord, a lower chord, two diagonal chords and 7 perpendicular panel points. These timbers were all hand hewn and varied in sizes from 12x14 inches to 14x18 inches, the lower chords being of the latter size. The stringers which ran the length of the bridge parallel to and between the

Preparing to move the bridge.
—*Hubbard*

The bridge moved smoothly ashore.
—*Hubbard*

Hours of preparation went into the moving.
—*Hubbard*

lower chords were 12x16 inches, and the transverse floor beams, which ran perpendicular to the lower chords, were 12x14 inches. The latter were also hand hewn. For the most part, the remaining member and the housing materials were mill-sawed timber. The housing was 130 feet long and 26 feet high (to the top of the gable roof). The opening at each end was 14'2" high and 14'2½" wide.

Following the high water of the 1955 winter season, the bridge was examined by Mr. F. P. Cordero, Field Engineer of California Division of Highways, and in his report of July 5, 1956, he described the condition of the bridge. The lower chords of both upstream and downstream trusses had failed due to rot. Failure of the lower chord on the downstream side had caused the bridge to sag some 3 to 4 feet; practically all panel points of both trusses were distorted. The upstream ends of two of the floor beams were broken by the drift during the 1955 high water, and all floorbeams showed evidence of decay. Cordero went on to state that the entire structure was in such poor physical condition that it was in danger of collapsing from its own dead weight at any time.

Topping tree for bridge supports.
—*Udell*

The first and most urgent step was to pull the bridge over to the north bank before the flood season began. To do this, it was jacked up and a cribbing built of wooden beams placed beneath it. Pieces of 3-inch pipe were placed between wooden tracks and the lower chords to serve as rollers. Blocks and cables were rigged and the winch on a caterpillar tractor pulled the old bridge to safety on November 29, 1956.

Special logging equipment was needed to move the trees to the bridge site.
—*Merrill*

Timbers were shaped by hand.
—*Udell*

After careful measurements had been taken, the bridge was dismantled. All rotted timbers and materials were discarded and all salvageable wood was carefully saved. To facilitate the removal of the shingles, about 14 bundles of 20% dynamite were strung beneath the roof, then detonated. The blast removed the shingles neatly and loosened the nails so that they could be pulled out easily.

New abutments were constructed in the same places that the old ones had stood. These new abutments, unlike the former ones, which were made of hewn wooden cribbing with rock fill, were made of reinforced concrete which will be covered by rock rubble.

The reconstruction of the bridge took place on the north bank of the river. New timbers were hand hewn from ponderosa pine and the trusses were assembled on steel "I" beams (steel beams whose cross-section r sembles the letter "I"), which wer to serve as "tracks" when the bridg was pulled back into place. To guar against water, all joints were mad watertight so that moisture could n invade them and provide a suitab habitat for fungi which would caus

Replacing the timbers called for special skill
—*Udell* 11

The bridge started to take shape again.
—*Udell*

rotting, one of the major factors contributing to the weakening of the old bridge. Paper and sealing material were placed between all timbers. This plus the weight of the timbers produced a watertight seal.

Slowly, yet steadily, the Wawona Covered Bridge began to rise again. Mr. Glen Gordo, under whose immediate supervision the restoration was carried out, is to be complimented for his efforts to insure that the completed bridge would be exactly like the former structure in every detail — even to the point of using square nails which are like those found in the former bridge. The restored bridge is sound enough that many of the members could have been omitted, but they have been included in the structure for authenticity — because they were in the old bridge.

When all of the work had been completed (with the exception of siding, flooring and shingles), the bridge was pulled back into place. Steel "I" beams were placed across the two permanent and two temporary abutments, level with the "I" beams on which the bridge was

A "track" was made to pull the bridge back into place.
—*Udell*

With gentle easing the bridge came back.
—*Udell*

resting. These were then welded together forming one continuous "track". The bridge was then raised and three inch pipe was placed between the lower chords and the track so that the restored bridge could be pulled back into place just as the old bridge had been pulled to safety After the bridge had been pulled back into position, an operation which lasted about 5 hours, it was once more jacked up, the pipe and "I" beams were removed, and it was lowered onto its abutments, never, it is hoped, to be moved again.

Now with the siding, flooring, and shingles in place, the Wawona Covered Bridge stands again. It stands solidly, with no temporary piers to help support it. It stands true with no sag or lean. Now today's children and after them their children, can see an authentic covered bridge. Children who are familiar with six-lane highways, high speed automobiles, complex "cloverleaves," and mighty steel bridges can see, touch, and walk through the covered bridge that grandmother rode through on her way to Yosemite Valley. Another link with Yosemite's colorful and wonderful past has been saved.

Once in place the shell was replaced.
—*Udell*

The bridge as it appears today. Only rock work and fill remain to complete the job.

—*Hubbard*

SAD SACK THE BEAR

By Carl Powell, (age 7)

(As told to his father, Ranger Naturalist C. A. Powell)

Saturday we drove many miles by a river and up a mountainside. It was just getting dark when we reached the top of the mountain in Yosemite Park. The mountain was called Glacier Point.

We began to set up camp. Carl and Walt helped unload the trailer. Carl carried sleeping bags. Walt carried the fishing poles. Daddy and mother brought the trunk with dishes and food up the hill. Everyone was hungry so the boys gathered wood to build a fire. Carl put papers first, then kindling, then large sticks on the fire. Soon, when the fire was hot, mother fixed tamales, spinach and salad. It tasted especially good.

When it was dark, we crawled into our sleeping bags. Before long we were fast asleep. Carl awakened when he heard a bang, bang, bang. Daddy grabbed the flashlight and went to the door with Walt. There was a little black bear eating out of the garbage can. He ran away.

The next morning we went down to the Glacier Point Hotel. When we came back, at the garbage can, we saw a shaggy grey bear, loping along above our tents. He visited camp so much the campers named him Sad Sack because he was so shaggy.

Each afternoon and each night he would visit camp. He raided the garbage cans. He begged for food. If food was left out he helped himself. His manners were very poor. People tried to feed him. Carl and Walt knew that bears should never be fed. Bears are not tame. Bears have

Garbage can raid.
—*N.P.S.*

big claws and if their appetites are not satisfied they may bite. Bears may reach for food and claw people not meaning to hurt them.

Sad Sack bothered the campers. Once a lady that fed him did not satisfy his appetite so he bit her little girl's shoulder but did not hurt her badly. He entered tents and helped himself to dinner. He learned to open ice boxes. He was a smart bear. He was such a nuisance the rangers decided to trap him.

The ranger brought up a big, round, green, steel trap. It was on wheels. On the back in white letters was printed, STAY AWAY — DANGER — BEAR TRAP. The front had a steel screen and a little door. People could see through the front of the cage. The back of the cage had a big door that pulled up high. Inside was a hook. The ranger put some ham on the hook for bait.

Everyone went to sleep and waited. Nothing happened. Carl and Walt and the ranger went up next morning to see the trap. No bear. About breakfast time Sad Sack came to visit camp. He was very hungry. He smelled the ham. It smelled good.

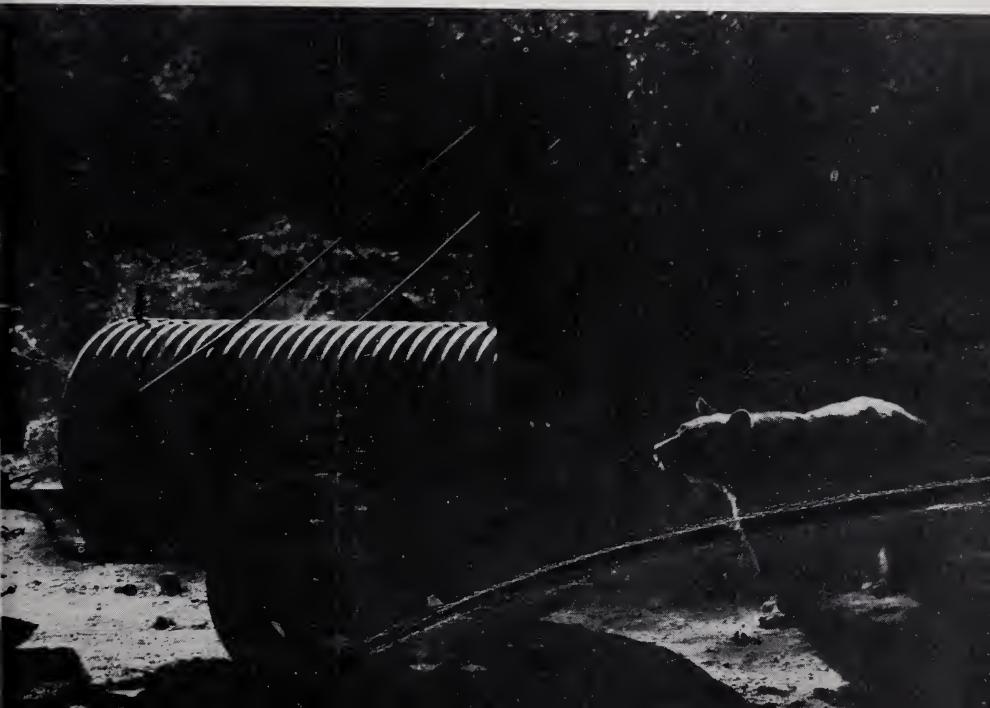
He crawled in the cage to take a bite and down went the door. A camper came down to see the ranger. He was excited. He said a bear was in the trap. Everyone ran up to see which it was. It was Sad Sack. The ranger called to have the truck come and take Sad Sack up in the mountains that afternoon.

Later, a camper that was leaving told the ranger that someone had felt sorry for the bear, and not knowing that he was dangerous, let him out of the trap. Now Sad Sack visits camp, but he is very leery of the trap.

Once Carl was playing tether ball with a friend and he looked over at a trailer parked across the road. Gunny Sack, Sad Sack's twin, was looking at an onion. The onion was in front of an ice box. Carl sneaked up quietly to scare him away. When Carl looked up, there was Sad Sack too, coming out of the top of the trailer. Carl threw a rock and hit the trailer and made lots of noise. Sad Sack and Gunny Sack ran down the hillside without finishing their dinner. Carl said, "I was scared, there were two against one!"

One day when Sad Sack visited camp, several boys saw him. They tried to chase him out of camp, but he went up the road and climbed a tree. He stuck his claws in the bark and quickly climbed higher and higher. He stayed about half an hour. Each time he tried to come down the boys yelled and he would go back up again. He hung on with his claws for a long time. Then he started taking deep breaths and growling so the boys told the ranger. The ranger said to let Sad Sack come down. Sad Sack climbed slowly down the tree backwards. When he landed on the ground, he ran as

Sad Sack smelled the ham inside the trap.
—*Anderson*



fast as he could up into the woods.

Sad Sack often went in the woods around the hotel. Some people fed him. Once he got so wise he found some construction workers' lunches and ate them. The workers were building a parking lot for the hotel and they got very hungry that day. He often climbed into cars. Once he smelled the food in the hotel garbage can and went into the hotel. He ran back and forth trying to get out. Everyone in the hotel shut their doors. The ladies were screaming. Sad Sack began scratching on a door and a man let him out. Another day, Sad Sack was curious and climbed the stairs to the second floor of the Mountain House.

One night he took his claws and ripped a board from the door of the old Glacier Point Stable, where the workers had stored dynamite. He nibbled five sticks of dynamite. Th next day when the ranger tried chase him from the parking lot couldn't run so good. He leane against a tree and just panted. Th dynamite didn't hurt him much. guess bears can eat most anythir because Sad Sack is all right no

At camp one day Mother w making two pumpkin pies. The smelled good. Sad Sack smelle them. He stuck his head in the ba of the tent. Carl and everyone start yelling. He backed out of the te and ran.

Some day the ranger hopes th Sad Sack will be hungry for spa ribs, ham or bacon, and will ent the bear trap again. Then he will taken up in the high country so th he can not bother campers. He w be turned loose to lead a norm bear's life like all bears should.

The hotel garbage attracted Sad Sack.
—*N.P.*

ear sign post at Merced Lake. This aspen tree will always have a story to tell. A bear in climbing the soft barked tree left a story for passers to see.

—*Russell*

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